

# SUSTAINABILITY CONFERENCE

ARG - INTEGRA

# Supplies Traceability Project

## Brief Description

### Sustainable Crops Protection – INTEGRA - Agribusiness

#### Description of the project

Platform for handling phytosanitary products allowing **the protection of crops in a sustainable way**. It ensures product **traceability** and **certification** by the National Agrifood Health and Quality Organism.

Bulk commercialization allows a **significant drop in the use of plastic** (containers/drums are eliminated) and also **avoids the mismanagement that affects water reservoirs**. In this way, INTEGRA Platform, **minimizes the environmental and communities' health impact**, and **boost a responsible product use** by providing to grain producers, usage monitoring and re-order threshold alerts capabilities.

#### Why should it win?

Contributes to nature conservations by reducing plastic usage, helping manage dangerous chemicals and diminishing carbon footprint. **For each tanker truck refilled, 660 kg of plastic usage is reduced.**

It also, contributes to **optimize operations** and represents an exemplary and relevant Project for one of the biggest companies in the country.

This product is a great record for NTT DATA and **can be useful at many other clients at different industries.**

Refer to \* for additional details.

(\*)

We implemented **ZOOMLO (NTT DATA solution) as an accelerator**, allowing phytosanitary product lots registration as well as shipments tracking, from its reception, at the formulation plant, to the final client.

The platform is integrated with BFA (Argentina Federal **Blockchain**) in each step of the distribution chain to address safety and inviolability information requirements.

Use of **IoT devices**, to gather **real time information** for lots **geolocation** and agriculturist's containers status (volume / re-order point).

A **Mobile App** is also part of our solution to allow end-customer (producer) product monitoring.





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## Client profile:

YPF is an Argentine energy company dedicated to the exploration, exploitation, distillation, distribution, and production of electricity, gas, oil, and hydrocarbon derivatives, as well as the sale of fuels, lubricants, fertilizers, plastics, and other products related to the industry. It is one of the largest companies in Argentina and the largest oil company in the region, employing directly or indirectly over 100,000 people from all over the country.

## Services and solutions

- Mobile App
- Cloud Architecture
- Blockchain
- IOT devices

## Why NTT DATA?

- Blockchain Experts
- Sector Knowledge
- Zoomlo Tracker Platform
- End to End Team

Use of **Zoomlo Tracker platform on Azure** for the registration, management and monitoring of sensitive chemical products for health and the environment.

## Challenges

- The aim is to offer these products to the final consumer in a **sustainable way**, monitoring the distribution chain (primary and capillary logistics) as well as their final use.
- Have **traceability certified by government Health and Quality Organizations**.

## Solution

- Integration of the **Zoomlo Tracker Platform** with **BFA (Blockchain Federal Argentina)** and **smart contracts** to address the security and inviolability requirements of the information according to government requirements.
- Use of **IoT devices**, to **collect in real time data** related to the geolocation of batches, container status (end customer) and to monitor available volumes, replenishment points, etc.
- **Mobile applications for tracking** the order by the carrier and to **monitor the existence of the product** at the final destination.
- The **architecture is based on Microsoft Azure Technologies**, giving the ability to easily scale the traceability to different products, and clients, and also providing security features and the integration with blockchain technology that certificate the tracking containers.

## Impact

- **Reduction in the use of plastic** due to bulk sales. Packaging is eliminated, and with it its inadequate treatment or reuse with the consequent benefit on the environment and the health of the population.
- **Savings in logistics and operating costs**, reducing the carbon footprint around the activity.
- **Containment of fraud, adulteration or contraband** through controls and end-to-end traceability.
- **Contribution to the responsible treatment and use of these chemicals** through the possibility of monitoring changes in custody and product stocks in each actor in the chain, identification of consumption levels, eventual losses/spills, etc.



# Supplies Traceability Project

## Overview

Our solution was designed to trace the distribution of phytosanitary products in bulk format. It allows real-time registration and tracking of both transports and containers, as well as custody changes that occur from the withdrawal at the formulator until the delivery of the product to the final customer.

The architecture is based on Microsoft Azure Technologies, giving the ability to easily scale the traceability to different products, and clients, and also providing security features and the integration with blockchain technology that certificate the tracking containers. From NTTDATA perspective it is a great opportunity to integrate cloud and blockchain technologies with an incredible sustainability impact.

Through our client, the relationship with SENASA, and with Microsoft partnership, we expect to evolve this solution to a wide number of trackable products and new clients. And not only over our local Argentinian market, also in Latam and worldwide.

### **Business and Sustainability Benefits:**

- **Inventory control:** The solution helps maintain an accurate record of the phytosanitary products that are in stock and their location, facilitating decision-making and preventing loss or fraud of products.
- **Reduced errors:** By having an automated and accurate system for registering and tracking the distribution of phytosanitary products, the risk of human errors is reduced, and inventory and distribution management efficiency is improved.
- **Regulatory compliance:** The phytosanitary product traceability solution helps comply with SENASA (Argentinian State Agency that protects issues of health and food quality) regulations on the storage and distribution of these products.
- **Expiration monitoring:** The solution can provide a detailed record of the expiration date of products, allowing better planning and prevention of the loss or adulteration of expired products.
- **Quality monitoring:** By having a detailed record of product distribution, the quality and effectiveness of phytosanitary products in the field can be tracked.
- **Reduced plastics in bulk sales:** Currently, phytosanitary products are marketed in 20-liter drums, generating 15,000 tons of plastic waste per year in the Argentine market.
- **Therefore, the solution will allow us to significantly reduce the use of plastic drums in the field.**

In summary, the solution improves efficiency, reduces errors, and ensures regulatory compliance, which can translate into cost savings and better inventory management.

The solution can be applied and scaled in several clients with similar SENASA requirements.

# Supplies Traceability Project

## Challenge

Our client faced the challenge of create a solution that complies with the regulations established by the State Agency that protects issues of health and food quality.

The Zoomlo Tracker solution, an NTT Data asset, was used as an accelerator for the Project. This solution allows the registration and management of batches of phytosanitary products as well as the tracking of shipments (Blockchain certification).

For the initiative, the Platform is linked to BFA (Blockchain Federal Argentina) to address the security and inviolability requirements of the information according to SE NASA requirements.

It is also integrated with IoT devices, to collect in real time information related to the geolocation of batches, container status (end customer) and to monitor available volumes, replenishment points, etc.

With this solution for the management of phytosanitary products, a sustainable response is provided for crop protection, achieving:

- a significant reduction in plastic use in the field,
- savings in logistics and operational costs, and
- a reduction in the carbon footprint associated with the activity.

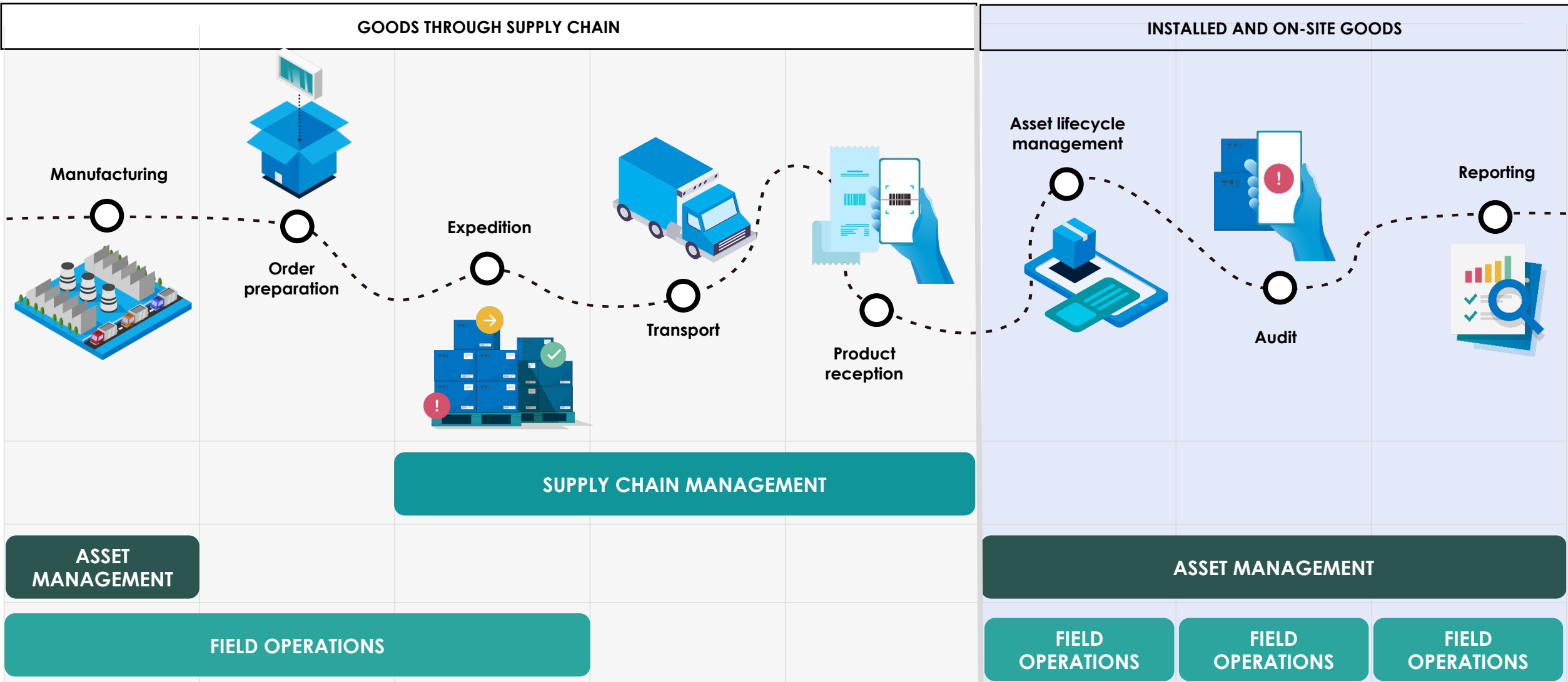
Likewise, with end-to-end traceability certified by the regulatory entity, the following is achieved:

- containment of fraud, adulteration, and smuggling,
- the ability to monitor product stock at each step of the chain,
- identification of consumption levels and any losses, and promotion of responsible handling of these substances sensitive to health and the environment.
- Expiration monitoring: The solution can provide a detailed record of the expiration date of products, allowing better planning and prevention of the loss or adulteration of expired products.
- Quality monitoring: By having a detailed record of product distribution, the quality and effectiveness of phytosanitary products in the field can be tracked.
- Reduced plastics in bulk sales: Currently, phytosanitary products are marketed in 20-liter drums, generating 15,000 tons of plastic waste per year in the Argentine market.

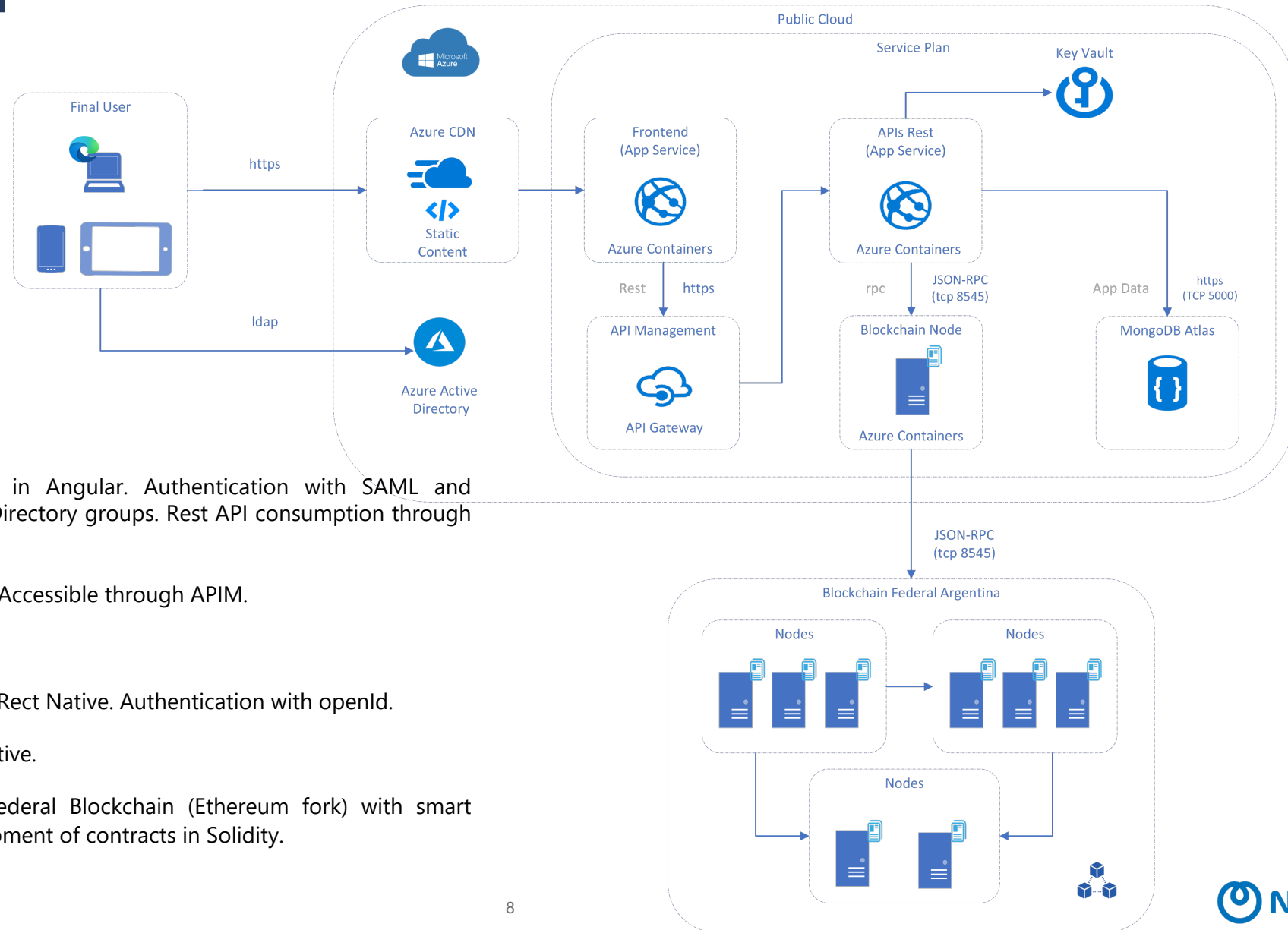
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## Functional Flow



# Supplies Traceability Project Architecture Diagram



- **Frontend:** Web solution, developed in Angular. Authentication with SAML and Authorization based on Azure Active Directory groups. Rest API consumption through API Management.
- **Backend:** Rest APIs developed in Java. Accessible through APIM.
- **Bdd:** Documentary, mongo DB Atlas.
- **Tracking App (Carrier):** Developed in Rect Native. Authentication with openId.
- **Producer App:** Developed in React Native.
- **Blockchain:** Use of the Argentine Federal Blockchain (Ethereum fork) with smart contracts for asset traceability. Development of contracts in Solidity.



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## Sustainability - Well-Architected Review

*Our solution has been built over the sustainability guides and principles, getting a very good initial result. This result will evolve during the next phases.*

### Sustainability - Well-Architected Review

